PENDING CLAIMS:

1. (Previously Presented) An electro-chemical deposition processing cell, comprising:

a cathode substrate holder configured to mechanically and electrically engage a substrate on a non-production side of the substrate;

an electrolyte container positioned below the substrate holder, the container having a plating solution and an anode disposed therein; and

a power supply in electrical communication with the cathode substrate holder and the anode.

2. (Previously Presented) The processing cell of claim 1, wherein the cathode substrate holder comprises an annular member having a lower surface, the lower surface having a plurality of vacuum channels formed thereon and an annular cathode contact ring affixed thereto.

3. (Previously Presented) The processing cell of claim 2, wherein the cathode contact ring is configured to electrically engage the non-production side of the substrate.

4. (Previously Presented) The processing cell of claim 2, wherein the cathode contact ring further comprises an insulative body having a plurality of electrically conductive substrate contacts radially positioned about a perimeter of the insulative body.

5. (Previously Presented) The processing cell of claim 2, wherein the cathode contact ring further comprises an insulative body having an annular seal positioned radially outward from a plurality of electrical substrate contacts.

6. (Previously Presented) The processing cell of claim 5, wherein the plurality of electrical substrate contacts are dry electrical contacts.

7. (Previously Presented) The processing cell of claim 1, wherein the substrate holder is configured to secure a substrate thereto via a vacuum chucking process and electrically contact the non-production side of the substrate with a cathode contact ring.

8. (Previously Presented) The processing cell of claim 1, wherein the anode comprises a plurality of electrical contact members extending into the electrolyte container into an anode plate.

9. (Previously Presented) The processing cell of claim 1, wherein the substrate holder further comprises a disk shaped member mounted to a lower portion of a head assembly, the disk shaped member having a substrate engaging surface formed thereon.

10. (Previously Presented) The processing cell of claim 9, wherein the disk shaped member further comprises:

an annular seal positioned proximate an outer periphery of the substrate engaging surface, the annular seal being configured to engage the non-production side of the substrate when the substrate is secured to the substrate engaging surface; and

a plurality of conductive electrical contacts radially positioned about the substrate engaging surface, the plurality of conductive electrical contacts being configured to electrically engage the non-production side of the substrate when the substrate is secured to the substrate engaging surface.

11. (Previously Presented) The processing cell of claim 10, wherein the annular seal is positioned radially outward from the plurality of conductive electrical contacts.

12. (Previously Presented) The processing cell of claim 10, wherein the annular seal is positioned radially inward from the plurality of conductive electrical contacts.

13. (Previously Presented) An apparatus for securing and electrically contacting a substrate on a non-production surface of the substrate, comprising:

a substrate holder assembly having a substrate engaging surface formed thereon; and

an electrical contact device positioned on the substrate engaging surface and having a plurality of radially spaced electrically conductive members configured to electrically communicate with a non-production surface of the substrate positioned on the substrate engaging surface.

14. (Previously Presented) The apparatus of claim 13, wherein the substrate holder assembly further comprises a vacuum operated substrate chuck.

15. (Previously Presented) The apparatus of claim 13, wherein the substrate holder assembly further comprises a disk shaped member having at least one vacuum channel formed therein that terminates on the substrate engaging surface, the at least one vacuum channel being configured to bias a substrate toward the substrate engaging surface upon application of a negative pressure to the at least one vacuum channel.

16. (Previously Presented) The apparatus of claim 13, wherein the electrical contact device further comprises a cathode contact ring.

17. (Previously Presented) The apparatus of claim 16, wherein the cathode contact ring further comprises an annularly shaped insulative body having a plurality of conductive electrical contacts radially positioned about the insulative body and partially extending therefrom and an annular sealing member positioned proximate the plurality of electrical contacts.

18. (Previously Presented) The apparatus of claim 17, wherein the annular sealing member is positioned radially outside of the plurality of conductive electrical contacts creating a dry contact configuration.

19. (Previously Presented) The apparatus of claim 17, wherein the annular sealing member is positioned radially inside the plurality of conductive electrical contacts creating a wet contact configuration.

20. (Previously Presented) The apparatus of claim 13, wherein the substrate holder assembly further comprises a vacuum chuck and the electrical contact device further comprises a cathode contact ring, the vacuum chuck being configured to support the substrate via engagement with the non-production side of the substrate.

21. (Previously Presented) A method for electroplating on a semiconductor substrate, comprising:

depositing a conductive seed layer on a production surface of the substrate;

depositing a backside conductive layer on a portion of the non-production side of the substrate, the backside conductive layer extending around a bevel of the substrate to electrically communicate with the seed layer;

securing the substrate in a chuck configured to engage the non-production surface of the substrate;

contacting the backside conductive layer with an electrical cathode contact on the non-production side of the substrate; and

plating over the conductive seed layer via application of an electrolyte to the production surface of the substrate and applying an electrical bias to the electrical cathode contact and an anode in communication with the electrolyte.

22. (Previously Presented) The method of claim 21, wherein securing the substrate further comprises utilizing a vacuum chuck assembly to secure the non-production side of the substrate to the vacuum chuck.

23. (Previously Presented) The method of claim 21, wherein contacting the backside conductive layer with an electrical cathode contact further comprises engaging the substrate with an insulative cathode contact ring affixed to the chuck, the insulative

cathode contact having a plurality of electrically conductive substrate contact pins radially formed therein and partially extending therefrom.

24. (Previously Presented) The method of claim 23, further comprising engaging the substrate with an annular seal member positioned radially outward from the plurality of electrically conductive contact pins, the annular seal member creating a dry contact configuration.

25. (Previously Presented) The method of claim 23, further comprising engaging the substrate with an annular seal member positioned radially inward from the plurality of electrically conductive contact pins, the annular seal member creating a wet contact configuration.

26. (Previously Presented) The method of claim 21, further comprising conducting an edge bead removal step to remove the backside conductive layer and a portion of the seed layer and a plating layer from the substrate.

27. (Previously Presented) The method of claim 21, wherein depositing a conductive seed layer comprises using at least one of a chemical vapor deposition process and a physical vapor deposition process.

28. (Previously Presented) The method of claim 21, wherein depositing a backside conductive layer comprises using at least one of a chemical vapor deposition process and an electroless process.

29. (Previously Presented) The method of claim 21, wherein the conductive seed layer and the backside conductive layer are copper.

30. (Previously Presented) An electro-chemical deposition processing cell, comprising:

means for supporting a substrate via engagement with a non-production side of the substrate;

means for electrically contacting the non-production side of the substrate;

an electrolyte container positioned proximate the means foe supporting and having an anode disposed therein; and

a power supply in electrical communication with the cathode and the anode.

31. (Previously Presented) The processing cell of claim 30, wherein the means for supporting further comprises a vacuum chuck assembly.

32. (Previously Presented) The processing cell of claim 30, wherein the means for electrically contacting the non-production side of the substrate further comprises a cathode contact ring affixed to the means for supporting.

33. (Previously Presented) The processing cell of claim 32, wherein the cathode contact ring further comprises an insulative body having a plurality of electrically conductive substrate contacts radially positioned about a perimeter of the insulative body.

34. (Previously Presented) The processing cell of claim 32, wherein the cathode contact ring further comprises an insulative body having an annular seal positioned radially outward from a plurality of electrical substrate contacts, the annular seal being configured to prevent electrolyte from flowing to the plurality of electrical substrate contacts.

35. (Previously Presented) A apparatus for depositing a metal layer on a substrate, comprising:

a rotatable cathode substrate support member configured to receive and support a substrate in a face up position;

an anode fluid dispensing nozzle assembly positioned above the cathode substrate support member;

a power supply in electrical communication with the cathode substrate support member and the anode fluid dispensing nozzle; and

a system controller configured to regulate at least one of a rate of rotation of the anode substrate support member, a position of the cathode fluid dispensing nozzle, and an output power of the power supply.

36. (Previously Presented) The apparatus of claim 35, wherein the rotatable cathode substrate support member comprises:

a rotatably mounted shaft in communication with a motor, the motor being configured to impart rotational motion to the shaft; and

a substrate support surface concentrically mounted to a distal end of the shaft, the substrate support surface being configured to receive a substrate in a face up position.

37. (Previously Presented) The apparatus of claim 36, wherein the substrate support surface further comprises an annular cathode contact ring positioned about a perimeter of the substrate support surface, the cathode contact ring having one or more electrical substrate contacts formed therein.

38. (Previously Presented) The apparatus of claim 37, wherein the cathode contact ring further comprises an annular seal member positioned radially outward from the plurality of electrical substrate contacts.

39. (Previously Presented) The apparatus of claim 37, wherein the one or more electrical contacts are in electrical communication with a negative output of the power supply.

40. (Previously Presented) The apparatus of claim 35, wherein the anode fluid dispensing nozzle is in electrical communication with a positive output of the power supply.

41. (Previously Presented) The apparatus of claim 35, wherein the substrate support member further comprises a substrate receiving surface having a plurality of apertures formed therein, each of the plurality of apertures being in communication with a vacuum source and configured to vacuum chuck the substrate to the substrate receiving surface.

42. (Previously Presented) The apparatus of claim 35, wherein the rotatable cathode substrate support is configured to support a substrate in a face-up position and to electrically contact a backside portion of the substrate.

43. (Previously Presented) The apparatus of claim 42, wherein the backside portion comprises a backside conductive layer deposited on a bevel and a backside portions of the substrate.